CLAIMS

1 1. A method comprising:
2 receiving at least one packet; and
3 disposing of the received at least one packet in response to a
4   walk of a Balanced Hash Table of Access Control List
5   Binary Comparison Trees, the Table encoding an Access
6   Control List.

1 2. The method of Claim 1, wherein said disposing of the
2 received at least one packet in response to a walk of a Balanced Hash
3 Table of Access Control List Binary Comparison Trees, the Table
4 encoding an Access Control List further includes:
5 constructing a hash table index value from one or more bit
6   positions, within the received at least one packet,
7   pointed at by one or more pointers of a Hash-Table-
8   Balancing Bit Selection Vector; and
9 walking a binary comparison tree associated with the
10   constructed hash table index value.

1 3. The method of Claim 1, further comprising:
2 converting the Access Control List to the Balanced Hash Table
3   of Access Control List Binary Comparison Trees, the Table
4   encoding the Access Control List.

1 4. The method of Claim 3, wherein said converting the Access
2 Control List to the Balanced Hash Table of Access Control List Binary
3 Comparison Trees, the Table encoding the Access Control List further
4 includes:
5 creating a binary comparison tree for at least one Access
6   Control List rule in the Access Control List.

1 5. The method of Claim 4, wherein said creating a binary
2 comparison tree for at least one Access Control List rule further
3 includes:
4 creating at least one node, having at least one miss branch and
5   at least one match branch, for at least one packet header
6   field utilized by the at least one Access Control List
7   Rule in the Access Control List.

1 · 6.   The method of Claim 3, wherein said converting the Access
2 Control List to the Balanced Hash Table of Access Control List Binary
3 Comparison Trees, the Table encoding the Access Control List further
4 includes:
5   inserting at least a part of a binary comparison tree
6   constructed for at least one Access Control List rule
7   into a hash table entry pointed at by a hash table index.

1   7.   The method of Claim 6, wherein said inserting at least a
2 part of a binary comparison tree constructed for at least one Access
3 Control List rule into a hash table entry pointed at by a hash table
4 index further includes:
5   generating a hash table index value for the at least one Access
6   Control List rule; and
7   inserting the at least a part of a binary comparison tree
8   constructed for at least one Access Control List rule
9   into a hash table entry pointed at by a hash table index
10   which is equal to the generated hash table index value.

1   8.   The method of Claim 7, wherein said inserting the at
2 least a part of a binary comparison tree constructed for at least one
3 Access Control List rule into a hash table entry pointed at by a hash
4 table index which is equal to the generated hash table index value
5 further includes:
6   inserting, in its entirety, the binary comparison tree
7   constructed for the at least one Access Control List rule
8   into the hash table entry pointed at by the hash table
9   index in response to a determination that no pre-existing
10   binary comparison tree is resident within the hash table
11   entry.

1   9.   The method of Claim 7, wherein said inserting the at
2 least a part of a binary comparison tree constructed for at least one
3 Access Control List rule into a hash table entry pointed at by a hash
4 table index which is equal to the generated hash table index value
5 further includes:
6   inserting at least one node of the binary comparison tree
7   constructed for the at least one Access Control List rule
8   into the hash table entry pointed at by the hash table
9   index in response to a determination that a pre-existing
10   binary comparison tree is resident within the hash table
11   entry.

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1   10.   The method of Claim 7, wherein said generating a hash

2   table index value for the at least one Access Control List rule

3   further includes:

4   constructing the hash table index value from the contents of

5   one or more packet headers utilized by the at least one

6   Access Control List rule in the Access Control List.

1   11.   The method of Claim 10, wherein said constructing the

2   hash table index value from the contents of one or more packet

3   headers utilized by the at least one Access Control List rule in the

4   Access Control List further includes:

5   constructing the hash table index value from the contents of

6   the one or more packet header bit positions pointed at by

7   one or more pointers of a Hash-Table-Balancing Bit

8   Selection Vector.

1   12.   The method of Claim 11, wherein said constructing the

2   hash table index value from the contents of the one or more packet

3   header bit positions pointed at by one or more pointers of a Hash-

4   Table-Balancing Bit Selection Vector further includes:

5   constructing the Hash-Table-Balancing Bit Selection Vector.

1   13.   The method of Claim 12, wherein said constructing the

2   Hash-Table-Balancing Bit Selection Vector further includes:

3   defining one or more pointers of the Hash-Table-Balancing Bit

4   Selection Vector to point to one or more bit positions in

5   one or more packet header fields utilized by one or more

6   rules of the Access Control List.

1   14.   The method of Claim 13, wherein said defining one or more

2   pointers of the Hash-Table-Balancing Bit Selection Vector to point to

3   one or more bit positions in one or more packet header fields

4   utilized by one or more rules of the Access Control List further

5   includes:

6   defining the one or more pointers of the Hash-Table-Balancing

7   Bit Selection Vector to point to one or more bit

8   positions, which appear relatively most frequently,

9   within the one or more packet header fields utilized by

10   the one or more Rules of the Access Control List.

1   15.   The method of Claim 13, wherein said defining one or more
2 pointers of the Hash-Table-Balancing Bit Selection Vector to point to
3 one or more bit positions in one or more packet header fields
4 utilized by one or more rules of the Access Control List further
5 includes:
6   defining the one or more pointers of the Hash-Table-Balancing
7   Bit Selection Vector to point to one or more bit
8   positions, whose contents have relatively equal variation
9   between logical one and logical zero, within the one or
10   more packet header fields utilized by the one or more
11   Rules of the Access Control List.

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1   16.   A system comprising:

2   means for receiving at least one packet; and

3   means for disposing of the received at least one packet in

4   response to a walk of a Balanced Hash Table of Access

5   Control List Binary Comparison Trees, the Table encoding

6   an Access Control List.

1   17.   The system of Claim 16, wherein said means for disposing

2 of the received at least one packet in response to a walk of a

3 Balanced Hash Table of Access Control List Binary Comparison Trees,

4 the Table encoding an Access Control List further includes:

5   means for constructing a hash table index value from one or

6   more bit positions, within the received at least one

7   packet, pointed at by one or more pointers of a Hash-

8   Table-Balancing Bit Selection Vector; and

9   means for walking a binary comparison tree associated with the

10   constructed hash table index value.

1   18.   The system of Claim 16, further comprising:

2   means for converting the Access Control List to the Balanced

3   Hash Table of Access Control List Binary Comparison

4   Trees, the Table encoding the Access Control List.

1   19.   The system of Claim 18, wherein said means for converting

2 the Access Control List to the Balanced Hash Table of Access Control

3 List Binary Comparison Trees, the Table encoding the Access Control

4 List further includes:

5   means for creating a binary comparison tree for at least one

6   Access Control List rule in the Access Control List.

1   20.   The system of Claim 19, wherein said means for creating a

2 binary comparison tree for at least one Access Control List rule

3 further includes:

4   means for creating at least one node, having at least one miss

5   branch and at least one match branch, for at least one

6   packet header field utilized by the at least one Access

7   Control List rule in the Access Control List.

1   21.   The system of Claim 18, wherein said means for converting
2   the Access Control List to the Balanced Hash Table of Access Control
3   List Binary Comparison Trees, the Table encoding the Access Control
4   List further includes:
5   means for inserting at least a part of a binary comparison tree
6   constructed for at least one Access Control List rule
7   into a hash table entry pointed at by a hash table index.

1   22.   The system of Claim 21, wherein said means for inserting
2   at least a part of a binary comparison tree constructed for at least
3   one Access Control List rule into a hash table entry pointed at by a
4   hash table index further includes:
5   means for generating a hash table index value for the at least
6   one Access Control List rule; and
7   means for inserting the at least a part of a binary comparison
8   tree constructed for at least one Access Control List
9   rule into a hash table entry pointed at by a hash table
10   index which is equal to the generated hash table index
11   value.

1   23.   The system of Claim 22, wherein said means for inserting
2   the at least a part of a binary comparison tree constructed for at
3   least one Access Control List rule into a hash table entry pointed at
4   by a hash table index which is equal to the generated hash table
5   index value further includes:
6   means for inserting, in its entirety, the binary comparison
7   tree constructed for the at least one Access Control List
8   Rule into the hash table entry pointed at by the hash
9   table index in response to a determination that no pre-
10   existing binary comparison tree is resident within the
11   hash table entry.

1   24.   The system of Claim 22, wherein said means for inserting
2   the at least a part of a binary comparison tree constructed for at
3   least one Access Control List rule into a hash table entry pointed at
4   by a hash table index which is equal to the generated hash table
5   index value further includes:
6   means for inserting at least one node of the binary comparison
7   tree constructed for the at least one Access Control List
8   rule into the hash table entry pointed at by the hash
9   table index in response to a determination that a pre-

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10   existing binary comparison tree is resident within the
11   hash table entry.

1   25.   The system of Claim 22, wherein said means for generating
2 a hash table index value for the at least one Access Control List
3 rule further includes:
4   means for constructing the hash table index value from the
5   contents of one or more packet headers utilized by the at
6   least one Access Control List rule in the Access Control
7   List.

1   26.   The system of Claim 25, wherein said means for
2 constructing the hash table index value from the contents of one or
3 more packet headers utilized by the at least one Access Control List
4 rule in the Access Control List further includes:
5   means for constructing the hash table index value from the
6   contents of the one or more packet header bit positions
7   pointed at by one or more pointers of a Hash-Table-
8   Balancing Bit Selection Vector.

1   27.   The system of Claim 26, wherein said means for
2 constructing the hash table index value from the contents of the one
3 or more packet header bit positions pointed at by one or more
4 pointers of a Hash-Table-Balancing Bit Selection Vector further
5 includes:
6   means for constructing the Hash-Table-Balancing Bit Selection
7   Vector.

1   28.   The system of Claim 27, wherein said means for
2 constructing the Hash-Table-Balancing Bit Selection Vector further
3 includes:
4   means for defining one or more pointers of the Hash-Table-
5   Balancing Bit Selection Vector to point to one or more
6   bit positions in one or more packet header fields
7   utilized by one or more rules of the Access Control List.

1   29.   The system of Claim 28, wherein said means for defining
2 one or more pointers of the Hash-Table-Balancing Bit Selection Vector
3 to point to one or more bit positions in one or more packet header
4 fields utilized by one or more rules of the Access Control List
5 further includes:

6   means for defining the one or more pointers of the Hash-Table-

7   Balancing Bit Selection Vector to point to one or more

8   bit positions, which appear relatively most frequently,

9   within the one or more packet header fields utilized by

10   the one or more Rules of the Access Control List.

1   30.   The system of Claim 29, wherein said means for defining

2 one or more pointers of the Hash-Table-Balancing Bit Selection Vector

3 to point to one or more bit positions in one or more packet header

4 fields utilized by one or more rules of the Access Control List

5 further includes:

6   means for defining the one or more pointers of the Hash-Table-

7   Balancing Bit Selection Vector to point to one or more

8   bit positions, whose contents have relatively equal

9   variation between logical one and logical zero, within

10   the one or more packet header fields utilized by the one

11   or more Rules of the Access Control List.

1   31. The system of Claim 16, further comprising:

2 signal bearing media bearing

3   said means for receiving at least one packet, and

4   said means for disposing of the received at least one

5   packet in response to a walk of a Balanced Hash

6   Table of Access Control List Binary Comparison

7   Trees, the Table encoding an Access Control List.

1   32.   The system of Claim 31, wherein said signal bearing media

2 further includes:

3   recordable media.

1   33.   The system of Claim 31, wherein said signal bearing media

2 further includes:

3   transmission media.

1   34.   The system of Claim 16, wherein the system further

2 includes:

3   a network station.

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1   35.   A program product comprising:
2   signal bearing media bearing
3   means for receiving at least one packet, and
4   means for disposing of the received at least one packet
5   in response to a walk of a Balanced Hash Table of
6   Access Control List Binary Comparison Trees, the
7   Table encoding an Access Control List.

1   36.   The program product of Claim 35, wherein said signal
2   bearing media further includes:
3   recordable media.

1   37.   The program product of Claim 35, wherein said signal
2   bearing media further includes:
3   transmission media.

1   38.   The program product of Claim 35, wherein said means for
2   disposing of the received at least one packet in response to a walk
3   of a Balanced Hash Table of Access Control List Binary Comparison
4   Trees, the Table encoding an Access Control List further includes:
5   means for constructing a hash table index value from one or
6   more bit positions, within the received at least one
7   packet, pointed at by one or more pointers of a Hash-
8   Table-Balancing Bit Selection Vector; and
9   means for walking a binary comparison tree associated with the
10   constructed hash table index value.

1   39.   The program product of Claim 35, further comprising:
2   means for converting the Access Control List to the Balanced
3   Hash Table of Access Control List Binary Comparison
4   Trees, the Table encoding the Access Control List.

1   40.   The program product of Claim 39, wherein said means for
2   converting the Access Control List to the Balanced Hash Table of
3   Access Control List Binary Comparison Trees, the Table encoding the
4   Access Control List further includes:
5   means for creating a binary comparison tree for at least one
6   Access Control List rule in the Access Control List.

1   41.   The program product of Claim 40, wherein said means for
2   creating a binary comparison tree for at least one Access Control
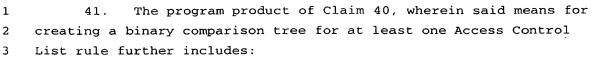3   List rule further includes:
4   means for creating at least one node, having at least one miss
5   branch and at least one match branch, for at least one
6   packet header field utilized by the at least one Access
7   Control List rule in the Access Control List.

1   42.   The program product of Claim 39, wherein said means for
2   converting the Access Control List to the Balanced Hash Table of
3   Access Control List Binary Comparison Trees, the Table encoding the
4   Access Control List further includes:
5   means for inserting at least a part of a binary comparison tree
6   constructed for at least one Access Control List rule
7   into a hash table entry pointed at by a hash table index.

1   43.   The program product of Claim 42, wherein said means for
2   inserting at least a part of a binary comparison tree constructed for
3   at least one Access Control List rule into a hash table entry pointed
4   at by a hash table index further includes:
5   means for generating a hash table index value for the at least
6   one Access Control List rule; and
7   means for inserting the at least a part of a binary comparison
8   tree constructed for at least one Access Control List
9   rule into a hash table entry pointed at by a hash table
10   index which is equal to the generated hash table index
11   value.

1   44.   The program product of Claim 43, wherein said means for
2   inserting the at least a part of a binary comparison tree constructed
3   for at least one Access Control List rule into a hash table entry
4   pointed at by a hash table index which is equal to the generated hash
5   table index value further includes:
6   means for inserting, in its entirety, the binary comparison
7   tree constructed for the at least one Access Control List
8   Rule into the hash table entry pointed at by the hash
9   table index in response to a determination that no pre-
10   existing binary comparison tree is resident within the
11   hash table entry.

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1   45.   The program product of Claim 43, wherein said means for
2 inserting the at least a part of a binary comparison tree constructed
3 for at least one Access Control List rule into a hash table entry
4 pointed at by a hash table index which is equal to the generated hash
5 table index value further includes:
6   means for inserting at least one node of the binary comparison
7   tree constructed for the at least one Access Control List
8   rule into the hash table entry pointed at by the hash
9   table index in response to a determination that a pre-
10   existing binary comparison tree is resident within the
11   hash table entry.

1   46.   The program product of Claim 43, wherein said means for
2 generating a hash table index value for the at least one Access
3 Control List rule further includes:
4   means for constructing the hash table index value from the
5   contents of one or more packet headers utilized by the at
6   least one Access Control List rule in the Access Control
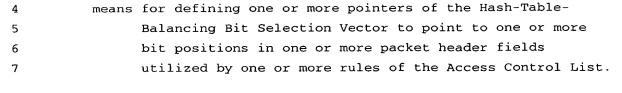7   List.

1   47.   The program product of Claim 46, wherein said means for
2 constructing the hash table index value from the contents of one or
3 more packet headers utilized by the at least one Access Control List
4 rule in the Access Control List further includes:
5   means for constructing the hash table index value from the
6   contents of the one or more packet header bit positions
7   pointed at by one or more pointers of a Hash-Table-
8   Balancing Bit Selection Vector.

1   48.   The program product of Claim 47, wherein said means for
2 constructing the hash table index value from the contents of the one
3 or more packet header bit positions pointed at by one or more
4 pointers of a Hash-Table-Balancing Bit Selection Vector further
5 includes:
6   means for constructing the Hash-Table-Balancing Bit Selection
7   Vector.

1   49.   The program product of Claim 48, wherein said means for
2 constructing the Hash-Table-Balancing Bit Selection Vector further
3 includes:

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4   means for defining one or more pointers of the Hash-Table-

5   Balancing Bit Selection Vector to point to one or more

6   bit positions in one or more packet header fields

7   utilized by one or more rules of the Access Control List.

1   50. The program product of Claim 49, wherein said means for

2 defining one or more pointers of the Hash-Table-Balancing Bit

3 Selection Vector to point to one or more bit positions in one or more

4 packet header fields utilized by one or more rules of the Access

5 Control List further includes:

6   means for defining the one or more pointers of the Hash-Table-

7   Balancing Bit Selection Vector to point to one or more

8   bit positions, which appear relatively most frequently,

9   within the one or more packet header fields utilized by

10   the one or more Rules of the Access Control List.

1   51. The program product of Claim 50, wherein said means for

2 defining one or more pointers of the Hash-Table-Balancing Bit

3 Selection Vector to point to one or more bit positions in one or more

4 packet header fields utilized by one or more rules of the Access

5 Control List further includes:

6   means for defining the one or more pointers of the Hash-Table-

7   Balancing Bit Selection Vector to point to one or more

8   bit positions, whose contents have relatively equal

9   variation between logical one and logical zero, within

10   the one or more packet header fields utilized by the one

11   or more Rules of the Access Control List.

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